Transmission Corridors Work Group

MEETING #2 (OCTOBER 20, 2021) SUMMARY

Opening

Susan Hayman, Ross Strategic Facilitator, welcomed Transmission Corridors Work Group (TCWG) members to the session and requested all public participants join via the livestream. The objectives guiding this meeting included learning about the respective energy visions of TCWG sectors, including how these visions contribute to Washington's energy vision, and anticipated transmission implications. Additional objectives included identifying initial reflections and impressions of energy needs and opportunities and potential gaps in energy sources.

Kathleen Drew, Chair of Washington Energy Facility Site Evaluation Council (EFSEC), opened the meeting by thanking everyone for their participation during the last workgroup meeting. Drew highlighted and the importance of members participation through sharing and listening to respective visions. She noted that this type of communication is the best way forward for success in the discussion of transmission corridors. Drew highlighted the visions to be presented in the meeting, and how these visions could impact the transmission future. Drew also highlighted opportunities for public involvement in the discussion process.

Following Drew's introduction, Hayman provided an overview of focus areas and concerns shared in the Meeting #1 Mural activity including implications of new facilities, environmental and cultural factors for regional coordination, and thoughts around existing and emerging capacity.

Members in attendance are listed in Appendix A.

TCWG Member Round Robin

Hayman welcomed members to share comments and questions regarding the TCWG charter revisions, Meeting #1, and other topics on their minds.

- *Questions from Members*
    - Will the TCWG project connect with the climate bill?
        - Kathleen Drew clarified there is still work being done in preparing for the next legislative agenda and further updates can be provided at future meetings.
    - Can you clarify the form of the final work product?
        - Drew shared that the work group will develop findings and recommendations that will be included in the final report.
    - What level of detail is our goal for Charter Outcome #2 in terms of where transmission is needed?
        - Drew responded sharing that Outcome #2 will be more general than specific. There may be different pathways depending on what types of resources can be developed.

- *Comments from Members*

- Members had divergent viewpoints on siting generation close to load. While doing so would potentially reduce transmission needs, opportunities to generate energy from renewable resources is largely found east of the Cascades, whereas load is greatest west of the Cascades. Other members shared that location is not the only consideration, but also the characteristics of the generation itself and its alignment with need.
- Members raised concern about the potential impacts to cultural resources. Members said cultural concerns must be considered when considering expediting reviews. Cultural resource protection is vital as artifacts are non-renewable and any destruction or damage is permanent.
- Members discussed the need to align siting with considerations regarding sensitive habitat. Often proposals are suggested in areas where there is a threat to Sage Grouse and other federally listed species.
- Members commented they hope the TCWG group can develop a grid that allows effective implementation of the Clean Energy Transformation Act (CETA).
- One member flagged that there is a need to be more explicit about separating environmental review from permitting.
- Members emphasized the importance of regional (including adjoining states) collaboration to address energy (and transmission) needs and gaps.
- Members elevated the need for openness around discussing what tolerance there should be in the standards set around the buildout of transmission in areas that may exacerbate harm to communities of color.

Presentation #1

Energy and Transmission Needs and Opportunities- Rob Lothrop, Columbia River Intertribal Fish Commission

Rob Lothrop, a representative from the Columbia River Intertribal Fish Commission (CRITFC), presented information to 1) expand the work group's understanding of the impacts of transmission on the region's waterways and tribal interests, and 2) provide an overview of energy and transmission needs and opportunities according to the CRITFC energy vision for the Columbia Basin. Lothrop shared that the Yakama, Nez Perce, Warm Springs, and Umatilla Tribes founded the commission to have a unified voice on protecting treaty rights and cultural resources from impacts associated with energy development. Key issues the commission addresses include siting renewable resources, energy conservation, future of the Columbia River Treaty, and the role of the Columbia River Power System and implications of the Snake dams.

Following Lothrop's presentation, members posed the question: What are the top takeaways for our work on transmission from the energy vision you've presented? Lothrop shared that collaboration with the American Farmland Trust resulted in finding win-win solutions to protect vulnerable resources using energy portfolios to minimize impacts.

Participants were asked to partake in a Mural activity to document any reflections on Presentation #1 including key findings, gaps in energy sources, or implications for cultural and natural resources. In the Mural activity, members highlighted the importance of respecting existing and traditional uses of the river and upland resources, as well as the need to minimize impacts through better use of existing facilities. Participants further raised the need to partner with tribes on and off tribal lands whenever possible. It was shared that regardless of the energy source, the most important factors for cultural

resource protection included location and project scope. Mural responses can be viewed in Appendix C. *Further presentation materials can be found here.*

Panel #1

Tom Flynn, Puget Sound Energy

Tom Flynn, with Puget Sound Energy (PSE) provided an overview from the investor-owned utilities' perspective on CETA transmission needs. Flynn shared the importance of level-setting needs driven from CETA to discuss the hurdles around securing transmission in the region. Flynn shared renewable resources are scattered across the regional footprint and that PSE works primarily with BPA to secure transmission to bring new resources to PSE service area. To align the 2021 Integrated Resource Plan (IRP) with existing resources, PSE further identified seven Resource Group regions. Flynn highlighted the costs and capital financing, prudency and rate recovery, FERC regulatory processes, and 10–20-year timelines as hurdles for new transmission under CETA.

Nicolas Garcia, Washington Public Utility District; Ian Hunter, Snohomish County Public Utility District

Ian Hunter (Snohomish PUD) and Nicholas Garcia (WPUDA) presented an overview on the Northwest Electrical System and grid reliability, sharing that there are 28 public utility districts (PUDs) in the state, with 24 providing electricity. PUDs provide more than one-third of electricity supplied to retail customers in Washington and are an embedded part of the state and are governed by non-partisan elected boards. The districts operate as at-cost utilities and are publicly owned, with commissioners working directly on behalf of customers. Hunter and Garcia said that, to be reliable, generation must exactly balance consumption and that there are challenges to ensuring reliability. They showed that the transmission grid is experiencing congestion during periods of peak demand. Changing load patterns and growing needs from transportation and building electrification, as well as changing generation patterns, may push established transmission corridors beyond their limits and exacerbate congestion. Hunter and Garcia shared how important it is to enable the adding of new and reinforcing existing transmission corridors to begin to address congestion. Other solutions to increasing west-side demand and decreasing west-side generation/capacity include examining new resource siting patterns and adding conservation and demand where cost-effective.

Member Discussion

Following Hunter and Garcia's presentation, TCWG members posed the question on whether utilities are exploring the use of direct current lines as a way to improve the reliability or stability of the transmission system going into the Puget Sound region. Garcia clarified that utilities are looking for the most cost-effective solution to meet the load. Other questions were raised regarding to what extent utilities are considering changes in the relationship between US and Canada treaty with regard to the Columbia River energy landscape. TCWG members shared that the treaty allows for either nation to terminate the agreement with 10 years notice. Further information regarding the treaty can be found here.

Members were asked to partake in a Mural activity to document any reflections on Panel #1. In the Mural activity, members highlighted that reliability is key to keeping the grid running and that every hour must be accounted for to meet demand. Additional key takeaways included the need to plan for extreme weather events and the fact that cost and financing remain significant hurdles. Members also

highlighted the implications for state and local governments, including that successful implementation of climate policy requires more robust transmission systems. All Mural responses can be found in Appendix C.

Panel #2

Katie Ware, Renewable Northwest

Katie Ware shared Renewable Northwest's mission to decarbonize the region and transition to clean energy. Ware noted that the rules implementing the law in utility compliance efforts are key to reaching CETA standards. To accomplish state energy goals, there must be an acceleration of investment in renewable resources and transmission through a regional approach and in coordination with neighboring states during planning. Ware elevated that a key takeaway from the identified scenarios is that greater connection between the 11 Western states is vital to lowering energy costs and that the state would be at a disadvantage to not pursue full geographic diversity. Ware further referenced the 2021 Power Plan, highlighting the Council's recommendation for the region to work together to run a study examining the expansion of the transmission system.

Vlad Gutman-Britten, Climate Solutions

Vlad Gutman Britten, with Climate Solutions, works towards accelerating solutions to the climate crisis and focuses on decarbonizing the energy economy. Climate Solutions has been a part of the large advocacy on major policies that have been adopted in the state over the last few years and are deeply involved in CETA. Climate Solutions sees a high value for distributed energy resources but doesn't get us to what we need for CETA. Britten raised that there are interests beyond just climate, energy, and reliability in the transmission discussion and that being able to craft a policy and approach that enables recognition of those values in developing projects is essential.

Anders Bisgard, Avangrid

Anders Bisgard shared that Avangrid is a large independent power producer (IPP) with a presence in the Northwest. Avangrid focuses on utility scale interconnection and partnering with customers to get renewable power to their load. Bisgard shared the challenges for developers in lining up internal processes with BPA, transmission, and other stakeholders to move through development process.

Member Discussion

Following Panel #2, TCWG members asking questions regarding the process of matching load profile with generation profiles. Through focusing on regional coordination, members discussed the likelihood that adjacent states may have excess energy to share during offset seasons (i.e., higher winter load requirements in PNW, versus summer in the intermountain west). Further issue of the diversity of resources was raised. Renewables spread across a geographic range allow for more "even" generation. TCWG members also discussed the issue of storage, and the role batteries may play in addressing variable energy needs.

TCWG members asked panelists whether developers see promise in having Washington state play a larger role in developing transmission resources. Panelists shared that this is a balancing act, with success in some areas where streamlining is effective. Following discussion of reliability and the role of the state, members again elevated concerns of cultural resource protection. When addressing cultural

resources, the level of concern is based on the location of the work, scope of the work, and permitting and funding, which determines which set of laws and policies to examine. Members shared that building relationships with tribes on the ground will help move projects forward in a culturally sensitive manner.

Participants were asked to partake in a Mural activity to document any reflections on Panel #2. Identified gaps in energy sources included geographically diverse production to increase reliability and proper education and incentives for demand-side conservation. Members also commented on the implications for cultural and natural resources, sharing concern that cultural resources are not renewable. Negative environmental impacts of energy production were also of concern. Members questioned whether the effects of construction, transportation, and maintenance of renewable infrastructure versus the use of "dirty" energy had greater impact. All Mural responses can be found in Appendix C.

Group Discussion of cross-cutting takeaways and observations

Following presentations, Hayman invited TCWG members to engage in group discussion on topics shared during the session. Participants comments and key takeaways included:

- Members share a high level of support for examining distributed energy and methods to contribute toward achieving Washington energy strategy goals, with a recognition that distributed energy is not enough to meet all future goals.
- Washington needs to address not only generation resources, but also opportunities that are new for the system, including demand response.
- Equity considerations and environmental impacts should be taken into account during all stages of recommendation-setting.
- Transmission planning must address load extremes and determine whether planning for/building out to meet the highest demand is necessary.
- Early and proactive consultation with tribal nations is critical.
- The grid could benefit from standardization of transmission lines and voltages, including consistently using higher voltage lines to accommodate future needs.
- Members expressed consensus on the need to determine current baseline of use and capacity.

Public Comment

No public comment was provided during the October 20th Transmission Corridors Work Group meeting. Public comment shared via email can be found in Appendix B.

Closing

Rob Willis, Ross Strategic facilitator, shared that the Transmission Corridor Work Group facilitation team would share the Mural activity and meeting presentations following the session. Willis further guided the TCWG members through the expectations for Meeting #3.

Kathleen Drew commented on the importance of having a shared understanding of both what the overall challenge is and what the diversity of views are. This will look to inform gaps and determine challenges and barriers to doing so. Drew thanked participants for their time and for sharing their

expertise, perspective, and viewpoints in the path towards developing meaningful recommendations to the Legislature.

APPENDIX A: MEMBERS/ALTERNATES IN ATTENDANCE

Affiliation	Member Name	Attendance
Department of Commerce	Glenn Blackmon	Y
UTC	Elizabeth O'Connell	Y
Department of Ecology	Brendan McFarland	N
Department of Fish and Wildlife	Benjamin Blank	Y
Department of Natural Resources	Loren Torgerson	Y
Washington State Department of Transportation	Ahmer Nizam	Y
Department of Archaeology and Historic Preservation	Allyson Brooks	N
Military Department	Bernard (Rick) Jackson	N
Association of WA Cities	Julie Coppock Clint Whitney	Y Y
Association of WA Counties	Kevin Shutty Lindsey Pollock	Y Y
Public Utility Districts	Nicolas Garcia	Y
Sovereign Tribal Governments	Dana Miller Steven Mullen-Moses	Y Y
Affected utility industries	Lorna Luebbe Sarah Leverette	N Y
Statewide environmental organizations	Vlad Gutman-Britten Erin Saylor	Y Y
Bonneville Power Administration	Anders Johnson	Y
US. Department of Defense	Steve Chung	Y

APPENDIX B: PUBLIC COMMENT

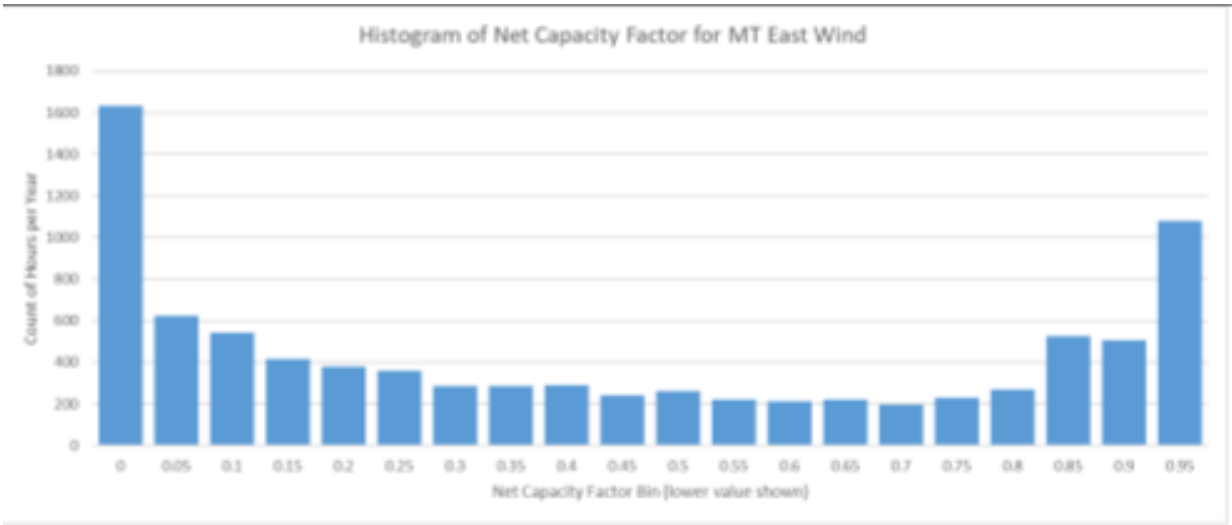
Public Comment 1

I attended the meeting via streaming and wish to comment on one concern that was touched on briefly by Katie Ware of Renewable NW, namely Firm Transmission requirements. Although this does not pertain to the location of transmission corridors it pertains to the amount of new transmission needed and hence the number of new corridors.

The current requirement (called Firm Transmission) is that transmission capacity be matched to the nameplate rating of the generation to ensure that overload never exists. This has worked well in the past because thermal generation sources, usually baseline power, normally generate at a capacity factor of up to 95% of nameplate rating. This results in an equivalent efficient loading of the transmission line. When renewable resources, especially wind and solar, replace thermal sources this changes. These generation outputs, dependent on weather fluctuation, vary from 0-100% capacity factor but with an average of only 20-50%. This greatly reduces the actual MWh output with respect to the nameplate rating. This means that when the current Firm Transmission requirement is applied, up to 50-80% of the MWh capacity of the transmission line is not available – a very inefficient use of an expensive asset.

Addressing this inefficiency is possible but requires an innovative whole system approach to transmission development that includes generation, storage, effective control, and perhaps market factors as well as the needed transmission assets. An example follows.

This is a histogram of a wind farm located in Eastern Montana (provided by Puget Sound Energy). It shows the actual hours of output at each capacity factor over a period of a year.



Referring to the chart - if you sum up the number of MWhs produced by multiplying the hours times the capacity factors times the nameplate rating (assume 1 MW for simplicity) and divide that by the total yearly hours (8760) you see that only 42% of MWh capacity was produced. Firm Transmission requires 100% of nameplate MW, but only 42% of MWhs would be loaded, meaning the transmission line was 58% inefficient with respect to its MWh capacity. How can this be addressed?

Here is where innovation is needed. If a control system were developed that never permitted the instantaneous generation load to exceed the transmission line capacity, the Firm Transmission requirement could be retired. This would permit the transmission line to be fully loaded at any desired time. Such a control system was not possible in the past, but we are in the age of Artificial Intelligence and 5G speed where it is not only possible but would ease the complexity of current control. With this control system, the same (existing) transmission lines could carry much higher generation capacities and reduce the need for new corridors.

Of course, there would be many times, with wind blowing at its peak, when the generated capacity was greater than the transmission line capacity or greater than the line load – what happens then? Several options: 1) generation could be partially curtailed, 2) generation could be stored (batteries) for when the wind wasn't blowing or 3) excess generation could be sold to provide the low-cost energy source being sought to make green hydrogen.

There are better solutions to the need for more transmission than creating more costly corridors with their inherent impact on the environment. Replacing Firm Transmission is one of them. I would encourage to you to study-in-depth changing the Firm Transmission requirement to establish the actual savings and reduce the need for new corridors.

-Willard Westre, Washington Clean Energy Coalition, Union of Concerned Scientists

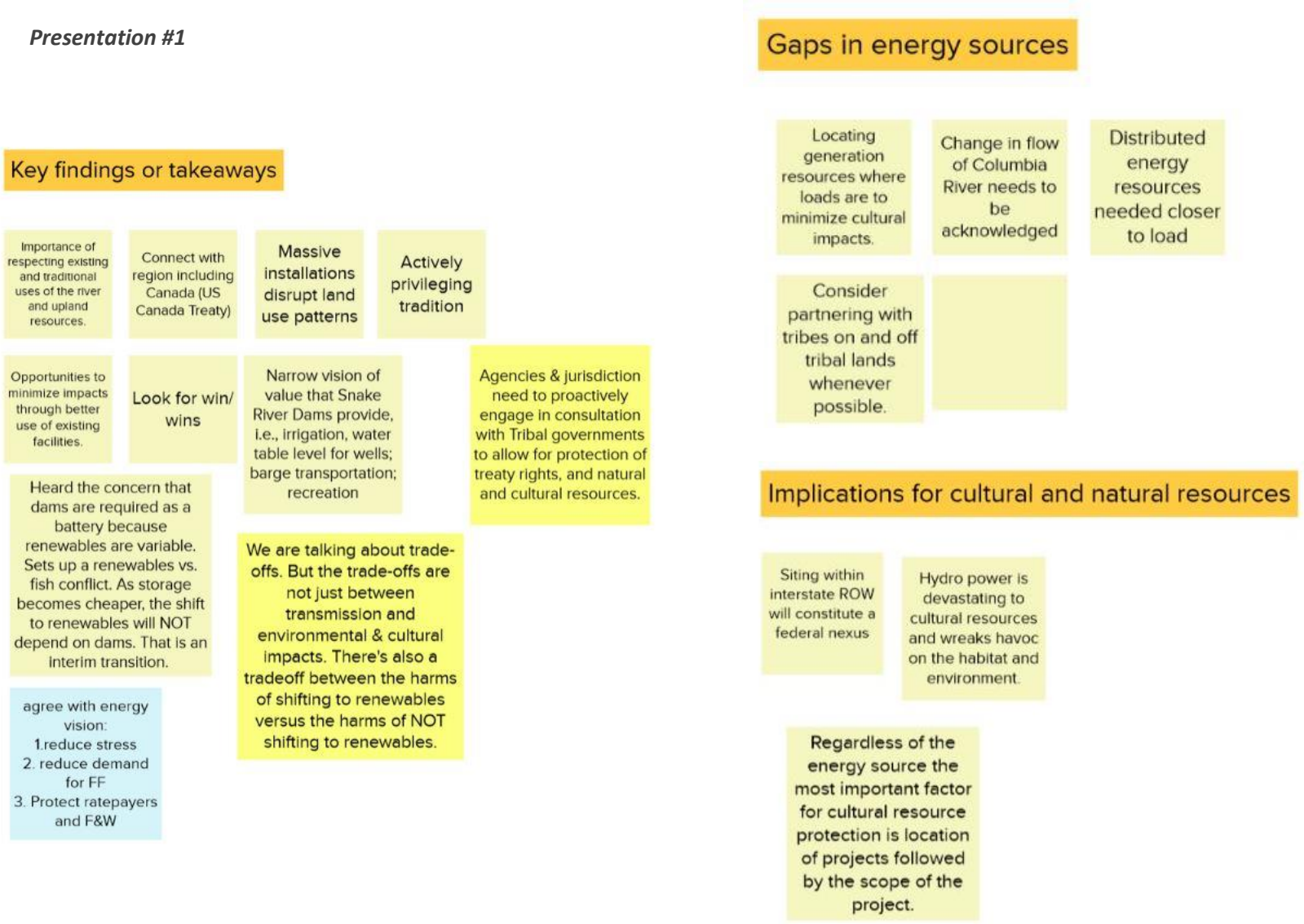
Public Comment 2

The HVDC situation is changing. Buried HVDC on rail corridors or other existing rights of way (as suggested in "page 51" of this document https://climatecrisis.house.gov/sites/climatecrisis.house.gov/files/Climate%20Crisis%20Action%20Plan.pdf) I would like to see PS&P RR used for offshore wind. The use of BNSF and other rail corridors for HVDC from Wind and solar from Midwest and Southwest should be considered,

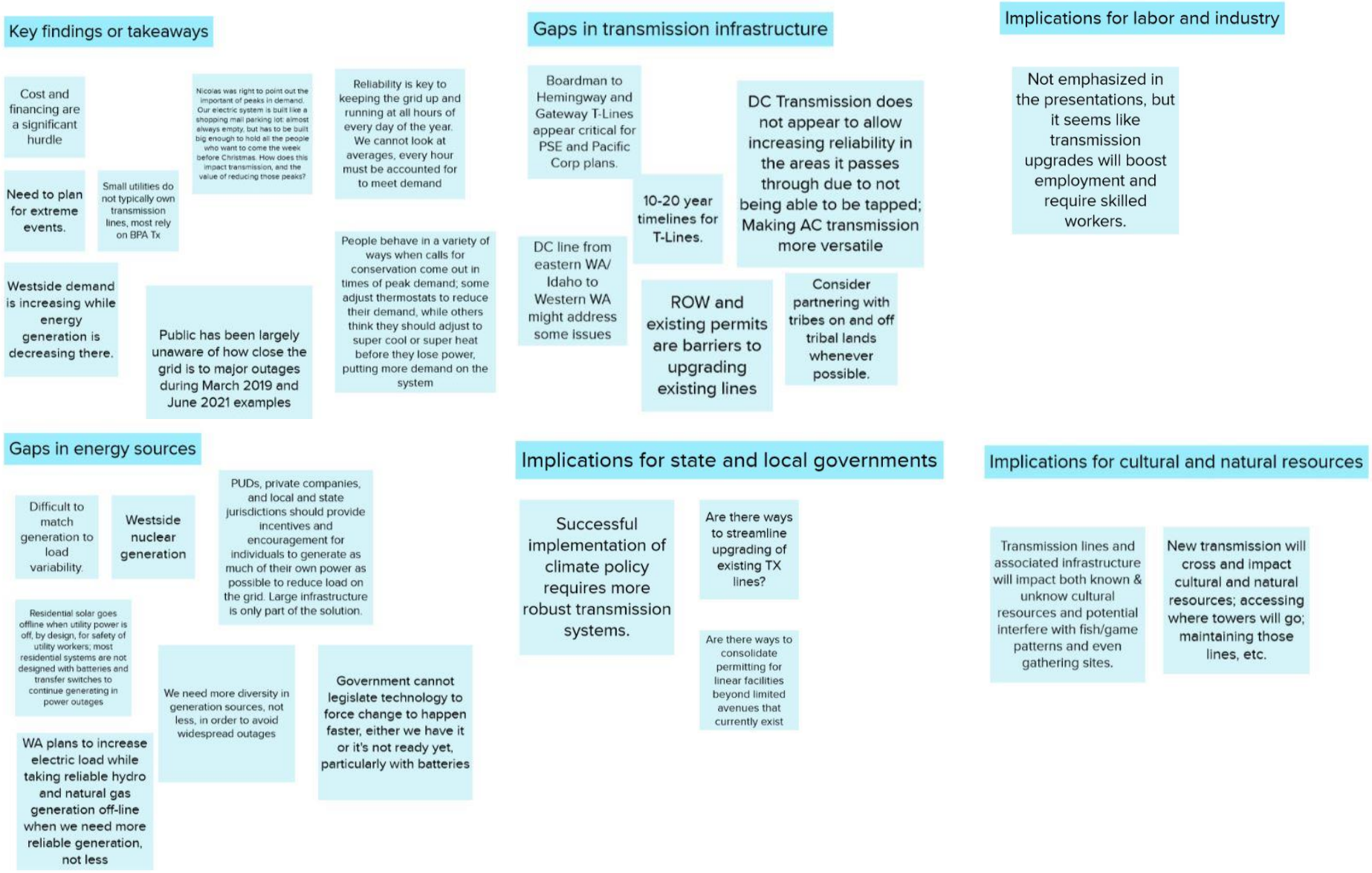
- Bill Moyer, Backbone Campaign

APPENDIX C – MURAL RESULTS

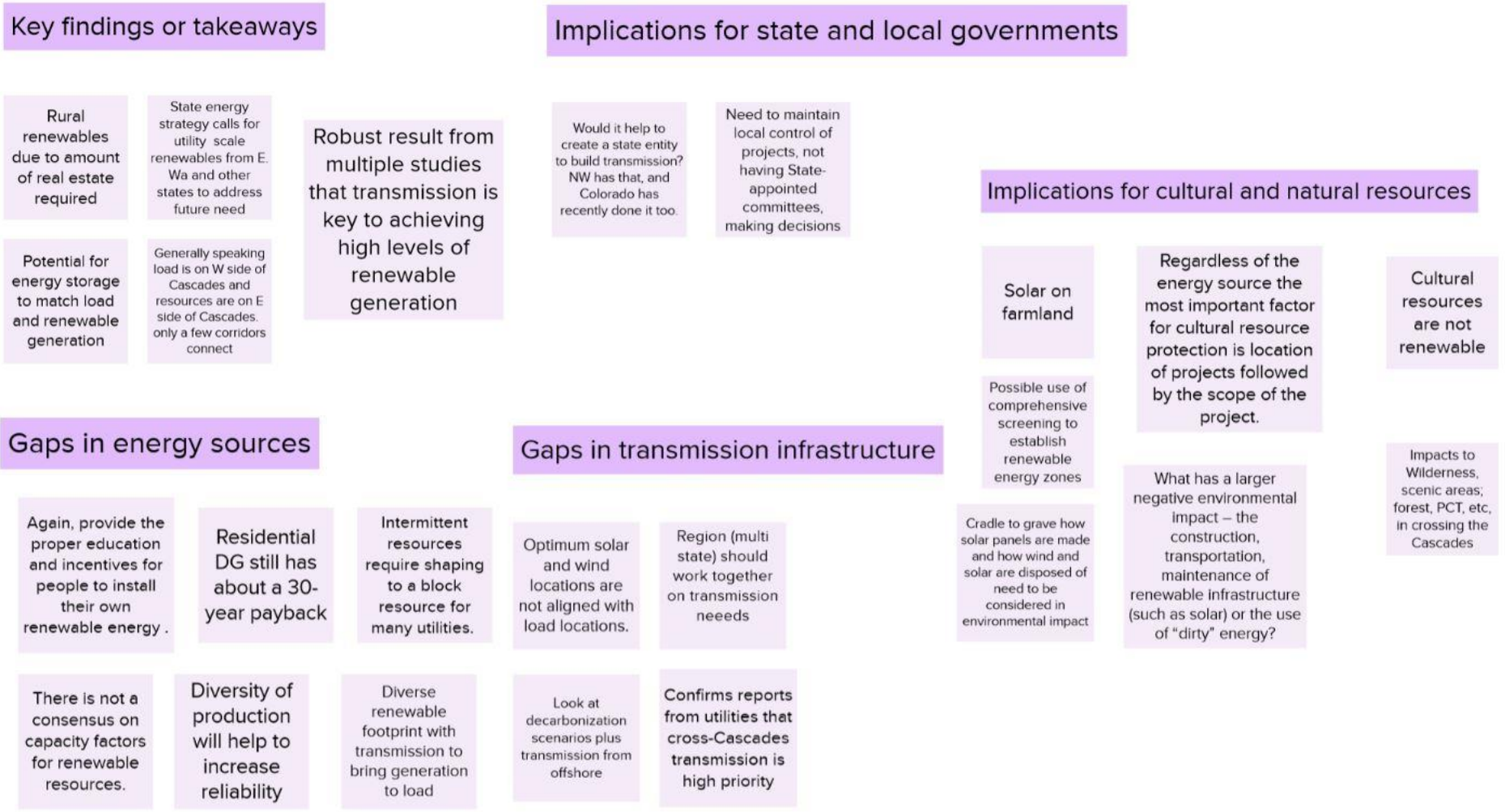
Presentation #1



Panel #1


Key findings or takeaways
Cost and financing are a significant hurdle
Nicolas was right to point out the important of peaks in demand. Our electric system is built like a shopping mall parking lot: almost always empty, but has to be built big enough to hold all the people who want to come the week before Christmas. How does this impact transmission, and the value of reducing those peaks?
Reliability is key to keeping the grid up and running at all hours of every day of the year. We cannot look at averages, every hour must be accounted for to meet demand
Need to plan for extreme events.
Small utilities do not typically own transmission lines, most rely on BPA Tx
People behave in a variety of ways when calls for conservation come out in times of peak demand; some adjust thermostats to reduce their demand, while others think they should adjust to super cool or super heat before they lose power, putting more demand on the system
Westside demand is increasing while energy generation is decreasing there.
Public has been largely unaware of how close the grid is to major outages during March 2019 and June 2021 examples
Gaps in transmission infrastructure
Boardman to Hemingway and Gateway T-Lines appear critical for PSE and Pacific Corp plans.
DC Transmission does not appear to allow increasing reliability in the areas it passes through due to not being able to be tapped; Making AC transmission more versatile
10-20 year timelines for T-Lines.
DC line from eastern WA/ Idaho to Western WA might address some issues
ROW and existing permits are barriers to upgrading existing lines
Consider partnering with tribes on and off tribal lands whenever possible.
Implications for labor and industry
Not emphasized in the presentations, but it seems like transmission upgrades will boost employment and require skilled workers.
Gaps in energy sources
Difficult to match generation to load variability.
Westside nuclear generation
PUDs, private companies, and local and state jurisdictions should provide incentives and encouragement for individuals to generate as much of their own power as possible to reduce load on the grid. Large infrastructure is only part of the solution.
Residential solar goes offline when utility power is off, by design, for safety of utility workers; most residential systems are not designed with batteries and transfer switches to continue generating in power outages
We need more diversity in generation sources, not less, in order to avoid widespread outages
Government cannot legislate technology to force change to happen faster, either we have it or it's not ready yet, particularly with batteries
WA plans to increase electric load while taking reliable hydro and natural gas generation off-line when we need more reliable generation, not less
Implications for state and local governments
Successful implementation of climate policy requires more robust transmission systems.
Are there ways to streamline upgrading of existing TX lines?
Are there ways to consolidate permitting for linear facilities beyond limited avenues that currently exist
Implications for cultural and natural resources
Transmission lines and associated infrastructure will impact both known & unknow cultural resources and potential interfere with fish/game patterns and even gathering sites.
New transmission will cross and impact cultural and natural resources; accessing where towers will go; maintaining those lines, etc.

Panel #2


Key findings or takeaways
Rural renewables due to amount of real estate required
State energy strategy calls for utility scale renewables from E. Wa and other states to address future need
Robust result from multiple studies that transmission is key to achieving high levels of renewable generation
Potential for energy storage to match load and renewable generation
Generally speaking load is on W side of Cascades and resources are on E side of Cascades. only a few corridors connect
Implications for state and local governments
Would it help to create a state entity to build transmission? NW has that, and Colorado has recently done it too.
Need to maintain local control of projects, not having State-appointed committees, making decisions
Implications for cultural and natural resources
Solar on farmland
Regardless of the energy source the most important factor for cultural resource protection is location of projects followed by the scope of the project.
Cultural resources are not renewable
Possible use of comprehensive screening to establish renewable energy zones
Impacts to Wilderness, scenic areas; forest, PCT, etc, in crossing the Cascades
Cradle to grave how solar panels are made and how wind and solar are disposed of need to be considered in environmental impact
What has a larger negative environmental impact – the construction, transportation, maintenance of renewable infrastructure (such as solar) or the use of "dirty" energy?
Gaps in energy sources
Again, provide the proper education and incentives for people to install their own renewable energy .
Residential DG still has about a 30-year payback
Intermittent resources require shaping to a block resource for many utilities.
There is not a consensus on capacity factors for renewable resources.
Diversity of production will help to increase reliability
Diverse renewable footprint with transmission to bring generation to load
Gaps in transmission infrastructure
Optimum solar and wind locations are not aligned with load locations.
Region (multi state) should work together on transmission neeeds
Look at decarbonization scenarios plus transmission from offshore
Confirms reports from utilities that cross-Cascades transmission is high priority